Time equals money?

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Time equals money?: A randomized controlled field experiment on the effects of four types of training vouchers on training participation

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ABSTRACT

Organizations aiming to help their employees in fostering their human capital offer training, but not all employees participate. Some organizations therefore experiment with training vouchers that typically offer financial means for training to motivate training participation. However, the effectiveness of such vouchers remains suboptimal, arguably due to lack of clarity on- and variation in the mechanisms of such vouchers. The present paper uniquely employs Conservation of Resources theory to compare the effectiveness of four types of vouchers with different combinations of money and time as well as different (i.e. firm internal and external) governance on training participation. To this end, 230 employees in a large Dutch insurance company were randomly assigned to one of the four voucher types or a control group. For eleven months, training participation was monitored and a concurrent questionnaire measured several personal characteristics as potential covariates and moderators. We find that the voucher type that allows employees to freely choose between a training budget and training days most strongly encourages training participation. Vouchers that provide employees with either working days or a training budget did not improve training participation significantly compared to the control group. Moreover, moderation analyses suggested that the training participation of employees provided with non-flexible vouchers appears to depend more strongly on personal characteristics, and particularly components from the Reasoned Action Approach. These findings suggest that to encourage training participation organizations should best offer flexible vouchers that provide employees a free choice between money and working time to spend on training. Moreover, the findings demonstrate the applicability of Conservation of Resource theory to training vouchers and address the need for recognizing subjectivity within this theoretical framework.

1. Introduction

Skill-biased technological change (Autor, Levy, & Murnane, 2003; Machin & van Reenen, 1998), globalization (Spence, 2011),

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and demographic developments (Clarke, 2008; van der Heijden, Schalk, & van Veldhoven, 2008) require individuals and organizations to engage in continuous human capital maintenance and development. To enable sustained labor participation, individuals need to sustain the match between their KSAOs and changing internal and external labor market demands (Smith, 2010). Similarly, organizations must preserve and update their employees' human capital to sustain their competitive advantage (Valverde, Tregaskis, & Brewster, 2000; van der Heijde & van der Heijden, 2006). As training may aid in sustaining employee functioning and employability (de Vos, de Hauw, & van der Heijden, 2011; Groot & Maassen van den Brink, 2000; Sanders & de Grip, 2004), as well as organizational level human capital (Tharenou, Saks, & Moore, 2007) and performance (Blundell, Dearden, Meghir, & Sianesi, 2005), both organizations and individual employees substantially invest in training (e.g., Salas, Tannenbaum, Kraiger, & Smith-Jentsch, 2012). However, despite the apparent advantages of training, the mere availability of training opportunities does not guarantee that employees use them (Guerrero & Sire, 2001; Maurer, Weiss, & Barbeite, 2003). Therefore, it is relevant to identify both antecedents of- and ways to promote *training participation*.

To promote training participation, some organizations use *training voucher* programs that provide access to training at a time of choice (Gerards, de Grip, & Witlox, 2014; van Breugel, de Grip, & Dohmen, 2011). Similarly, various governments use training voucher programs to improve individuals' labor market chances (Görlitz & Tamm, 2016; Hidalgo, Oosterbeek, & Webbing, 2014; OECD, 2004; Schwerdt, Messer, Woessmann, & Wolter, 2012). Although voucher programs show promising effects on training participation, studied programs are restricted to monetary vouchers that provide a free (e.g. Hidalgo et al., 2014) or restricted (e.g., Gerards et al., 2014) choice of training. For example, Gerards et al. (2014) study a program aimed at stimulating a positive attitude towards employability by offering vouchers providing access to a selection of employability-oriented training courses at Philips Electronics in the Netherlands. Moreover, despite being recognized as an important barrier to training participation (Brown & McCracken, 2009; Cully, vanden Heuvel, Curtain, & Wooden, 2000; Gerards et al., 2014; Rubenson, 2010), *working time* has yet to be studied as potential voucher-provided resource. Additionally, previous studies consider several personal characteristics (Gerards et al., 2014; Görlitz & Tamm, 2016; Hidalgo et al., 2014; Schwerdt et al., 2012), but key determinants from the behavior change literature remain overlooked. Finally, existing studies (Gerards et al., 2014; Görlitz & Tamm, 2016; Hidalgo et al., 2014; OECD, 2004; Schwerdt et al., 2012; van Breugel et al., 2011) lack a clear comprehensive theoretical framework to explain voucher effectiveness. Therefore, the present paper investigates both the effects of novel types of training vouchers as well as previously unaddressed personal characteristics on training participation, within a Conservation of Resources (COR) theory framework (cf. Halbesleben, Neveu, Paustian-Underdahl, & Westman, 2014; Hobfoll, 1989).

Specifically, by centering on the research question '*Which training vouchers have the strongest effect on training participation and which variables moderate their effects*?' the present paper contributes to the literature in various ways. First, this paper is among the very few studies which investigate the effects of training vouchers (Gerards et al., 2014; Görlitz & Tamm, 2016; Hidalgo et al., 2014; Schwerdt et al., 2012), and its unique randomized controlled field experimental design provides *causal* evidence. Second, this paper broadens the knowledge on training vouchers by considering *novel types of vouchers* (i.e., working time, internally governed money, externally governed money, and a combination of internally governed money and working time). Third, this paper extends the understanding of training vouchers' effects on training participation by using the *COR theoretical framework*. By positioning training vouchers as resources in this framework, the understanding of why (certain) vouchers promote training participation and covariate and moderation effects occur can be deepened. Fourth, by incorporating several *personal characteristics* (i.e., the components of the Reasoned Action Approach (RAA) (Fishbein & Ajzen, 2010), aspects of functioning at work (Fleuren, van Amelsvoort, Zijlstra, de Grip, & Kant, 2018), and ambitions to be mobile (cf. Gerards et al., 2014)) the conditions under which training vouchers are beneficial can be better understood. Fifth, this field experiment combining vouchers as resources with personal characteristics addresses Halbesleben et al.'s (2014) calls for studies on the *subjectivity of resources* (cf. Morelli & Cunningham, 2012) and for field experiments *testing COR theory's predictions* (cf. Chen, Westman, & Eden, 2009). The following section provides elaborate reasoning for each of these contributions and formulates specific hypotheses.

2. Theoretical model and hypotheses

2.1. Conservation of Resources theory and human capital investments

The Conservation of Resources (COR) theory posits that humans are motivated to protect current resources and to acquire additional resources (Hobfoll, 1989). Typically, protecting or acquiring resources requires resource investments. As such, both the availability of current resources and the motivation to invest them are relevant determinants of resource protection and acquisition. Moreover, COR theory suggests that recovering from resource loss also typically requires resource investments. Congruent with research on loss aversion (e.g., Cacioppo & Gardner, 1999; Kahneman & Tversky, 1979), COR theory further maintains that humans are more sensitive to resource losses than to gains. Four important extensions follow from COR theory: i) those with more resources are better equipped to gain additional resources; ii) resource losses typically lead to further resource losses; iii) resource gains typically lead to further resource gains; and iv) the amount of resources in possession relates negatively to protective behavior over resources (Halbesleben et al., 2014; Hobfoll, 1989).

Importantly, the exact definition of resources is debatable. Resources can be considered as entities that are valued (i.e., considered good) by individuals (Hobfoll, 1989). However, this value-based approach arguably implies that anything can be a resource depending it being perceived as good, which conflates the resource with the outcome (i.e., resources always lead to positive outcomes) (e.g., Gorgievski, Halbesleben, & Bakker, 2011). Therefore, Halbesleben et al. (2014) define resources as "anything perceived by the individual to help attain his or her goals" (p. 5). This definition is probably more instrumental in research on COR theory, as it limits

resources to entities that (are perceived to) facilitate goal attainment rather than anything generally valued.

COR theory can easily be applied to training participation as a means of protecting or acquiring human capital and employability. Individuals' KSAOs and employability can be considered resources as they facilitate functioning at work and in the labor market (; Fleuren et al., 2018). That is, where maintaining or acquiring employment is the goal, KSAOs and employability are the resources facilitating its attainment. As training participation can contribute to maintaining KSAOs and employability (de Vos et al., 2011; Groot & Maassen van den Brink, 2000; Sanders & de Grip, 2004), training participation can be conceptualized as a goal-directed or resource protection/acquisition behavior. Consequently, following COR theory, the provision of facilitating resources (e.g., training vouchers) can elicit training participation. Therefore, it is interesting to identify the resources that most effectively facilitate training participation and whether existing training vouchers cover these.

2.2. Training vouchers as resources

Both training vouchers themselves and the monetary – and in this paper also *temporal* – means they provide can constitute resources. If training vouchers (are perceived) to inherently facilitate training participation, and training participation is a goal-directed behavior, they may constitute resources themselves. For example, an employer-provided voucher may directly facilitate training participation by signaling it as desired behavior to employees. Additionally, the means by which vouchers provide facilitation can be variable (e.g., specific training courses that are paid for, a selection of training courses that are paid for (Gerards et al., 2014), or money to be spent freely on training (Hidalgo et al., 2014)) and could also constitute the actual resource. That is, if the means provided by the voucher are perceived as that which facilitates the goal-directed behavior, these means constitute the resource and not necessarily the voucher itself. This point reiterates the relevance of perception in the context of resources: It is that which the individual perceives as facilitating goal attainment that constitutes the resource (Halbesleben et al., 2014; Morelli & Cunningham, 2012).

At least two factors determine the perception of (means provided through) training vouchers as facilitating goal attainment, namely the extent to which: A) the means offered are actually helpful and B) training participation actually constitutes goal-directed behavior. Regarding point A, money does not necessarily provide the optimal facilitation for training participation. For example, when plenty of money is already available, training is free, or other barriers are more relevant, money is not necessarily a resource with motivational potential. Consequently, considering other aspects that may facilitate training participation and can be offered through vouchers (e.g., time) is relevant. Regarding point B, if developing KSAOs or employability is not a goal, training participation does not necessarily constitute a goal-directed behavior. Then, neither the voucher itself nor the means it provides are resources with motivational potential. Therefore, both the nature of the vouchers (i.e., money, time, or both) and the personal characteristics (i.e., variables that capture the extent to which development is an individual's goal) are important to consider within a COR-approach to vouchers.

2.3. Potential resource-like aspects of training vouchers

Several aspects can contribute to the (perceived) helpfulness of the means training vouchers offer. First, money as provided through vouchers in previous studies can facilitate training participation by reducing the financial barrier for training participation. When training participation – or, ultimately, human capital/employability improvement – is a goal for employees and money is a barrier, money would be a resource. Second, voucher-provided time can be a resource if a lack of time is an important barrier for training participation (Brown & McCracken, 2009; Cully et al., 2000; Gerards et al., 2014; Rubenson, 2010). However, this potentially relevant resource has – to the best of our knowledge – not been studied yet. Third, vouchers could inherently provide additional flexibility regarding the timing of training participation. That is, compared to training courses at predetermined times, training vouchers could offer employees a choice regarding both the content and the timing of the training to match their needs/interests and schedules (cf. Walker, Redmond, Webster, & le Clus, 2007). As this allows employees more flexibility in managing barriers, this flexibility may also tap into employees' need for autonomy and thus have motivational potential in itself (Ryan & Deci, 2000). Fourth, vouchers could provide employees with an unambiguous mandate for training participation (Baldwin, Magjuka, & Loher, 1991; Tsai & Tai, 2003). That is, when managers are reluctant to allow training participation (e.g., because of scheduling issues) training vouchers could facilitate employees in leveraging their training participation. In line with COR theory, these four resource-like aspects of training vouchers could constitute resources that can facilitate and motivate training participation.

Training vouchers may have important motivational potential besides their aforementioned resource-like aspects. That is, a voucher can constitute a resource in itself if it is perceived as facilitating goal attainment. Then, following COR theory, the potential to lose this resource should trigger loss-aversive tendencies in people (Cacioppo & Gardner, 1999; Kahneman & Tversky, 1979). As vouchers are usually time specific (e.g., employees must spend the voucher within a year or it becomes void), they automatically have the potential to be lost if not spent within the given timeframe. Consequently, vouchers may inherently motivate people to spend them on training participation to avoid the impending complete loss when not participating in training within the given timeframe.

H1. Employees who receive training vouchers are more likely to participate in training than those who do not.

Considering the aforementioned aspects of training vouchers, two important predictions regarding their effectiveness on training participation can be made. First, as training vouchers can constitute resources, employees who receive vouchers are expectedly more likely to participate in training than those who do not receive them. Second, the type of voucher that most adequately removes the barriers to training participation should be associated with the highest training participation rate. Due to lack of scientific

comparisons, it is unclear which type of voucher most effectively removes the barriers (i.e., money, time, or both). However, vouchers offering flexibility of choice between potential barrier removing facets are likely associated with the highest training participation. That is, flexible vouchers are more likely to remove the specific barrier that keeps an individual from training participation as they inherently address more singular as well as combined barriers (i.e., money, time or both). By testing these predictions, the present paper provides insights into which type of vouchers should be used and tests central elements of COR theory empirically.

H2. Employees who receive flexible vouchers are more likely to participate in training than those receiving no vouchers or vouchers that only cover either money or time.

2.4. Internal governance as potential inhibitory factor

One common aspect of training vouchers may unintendedly counteract their motivational potential. That is, training vouchers are typically sourced from within the organization in which their recipients are employed (e.g., Gerards et al., 2014). As such, employees may perceive the organization to monitor voucher expenditures. Consequently, they might not participate in training as they fear to signal external mobility desires (cf. Connelly, Certo, Ireland, & Reutzel, 2011), particularly when the organization or the reasons for providing vouchers are not trusted. That is, the effectiveness of HR instruments can depend on the extent to which employees trust the intentions behind their implementation (Nishii, Lepak, & Schneider, 2008) and the organization in general (Bies & Tripp, 1996; Dirks & Ferrin, 2001; Robinson, 1996). Relatedly, employees might suspect upcoming reorganizations or forced external mobility when they suddenly provided with employability-oriented training (cf. Pearce & Randel, 2003). To circumvent this, external governance may be desirable so employers remain uninformed about the training participation of employees. Additionally, the aforementioned considerations highlight the relevance of including trust (cf. Dirks & Ferrin, 2001) as covariate in studies on training participation and potential moderator of vouchers' effects.

H3. Employees who receive externally governed money vouchers are more likely to participate in training than those receiving no vouchers or internally governed money.

H4a. Trust positively relates to training participation (direct covariate effect).

H4b. Trust magnifies training vouchers' effects on training participation, such that those scoring higher on trust are more likely to train when provided with vouchers (moderation effects).

2.5. Potential personal characteristics that guide the perception of training vouchers as resources

2.5.1. The Reasoned Action Approach

As argued, training vouchers only constitute resources if they are perceived to facilitate individuals in attaining their goal(s). Consequently, it is relevant to consider which aspects determine and reflect the extent to which individuals have training participation or, ultimately, human capital development/maintenance as a goal. Halbesleben et al. (2014) discuss that the extent to which something (i.e., training) constitutes an individual's goal, can depend on the extent to which it is valued by that individual and their environment and is considered attainable. As such, we argue in this section that the Reasoned Action Approach (RAA) (Ajzen, 2012; Fishbein & Ajzen, 2010) offers a useful framework for understanding for whom training vouchers actually constitute potential resources and thus may stimulate training participation in particular. This idea matches the existing view on training as an active and purposeful process (cf. the adaptive learning systems framework (Bell & Kozlowski, 2010; Kozlowski et al., 2001), the guiding framework for training research from Kraiger, Ford, and Salas (1993) (see also Ford, Kraiger, & Merritt, 2010), and the relevance of motivation/intention for training participation in other theoretical approaches to training (Dysvik & Kuvaas, 2014; Sitzmann & Weinhardt, 2015)).

The Reasoned Action Approach (RAA) posits that behaviors follow the intentions to perform them. In turn, intentions are a function of an individual's attitude, subjective norms, and perceived behavioral control in reference to the behavior (Ajzen, 2012; Fishbein & Ajzen, 2010). Here, intentions represent the extent to which individuals are willing and prepared to engage in a behavior. Moreover, attitudes are a function of factual beliefs about an object (e.g., training participation) and evaluations of these beliefs as good or bad (Fishbein, 1963; Fishbein & Ajzen, 2010). These beliefs are combined into an attitude representing the overall evaluation of the object (e.g., a positive or negative attitude towards training participation) (Fishbein & Ajzen, 1975, 2010). As such, an individual's attitude towards an object reflects the extent to which that individual values the object and considers it as a resource themselves (cf. Morelli & Cunningham, 2012). Similarly, subjective norms are formed by beliefs regarding how others evaluate an object and the perceived relevance of those others (Fishbein & Ajzen, 1975, 2010). These beliefs form the overall perceived norm regarding the object. Consequently, subjective norms reflect the extent to which something constitutes a resource within an individual's social context. Finally, perceived behavioral control is formed by beliefs regarding the extent to which several aspects that could related to one's capability to perform the behavior are present and actually enable the behavior (Fishbein & Ajzen, 2010).

Intentions arguably form adequate reflections of the extent to which the target behavior constitutes an individual's goal (cf. Lent, Brown, & Hackett, 1994). That is, given the aforementioned definition of intentions individuals with higher intentions to train can be expected to have training as a goal more so than those with lower intentions (e.g. Hurtz & Williams, 2009). Consequently, individuals with higher intentions to train are more likely to view training participation facilitating instruments (i.e. training vouchers or aspects they offer) as resources. It is arguably instrumental to distinguish between goal intentions (i.e. the intention to reach an end-state)

and implementation intentions (i.e. the means to engage in behaviors that allow one to reach the end-state) (Gollwitzer, 1993; Gollwitzer & Brandstätter, 1997). In the context of training vouchers, maintaining/developing human capital and employability constitute the goal intention and participating in training would constitute an implementation intention. Considering the notion that implementation intentions precede goal intentions, both can constitute personal resources. Then, training vouchers can be antecedent resources of implementation intentions and this chain could describe a resource caravan with additional motivational potential (Hakanen, Peeters, & Perhoniemi, 2011; Hobfoll, 2011). In sum, individuals with higher intentions to train are expectedly even more likely to engage in training when provided with vouchers. Evidence for this notion has been found in previous studies where, for example, setting goals (Gerards et al., 2014), motivational orientations (Johnson & Beehr, 2014) and intentions (Kyndt, Govaerts, Dochy, & Baert, 2011) predicted training participation. These studies, however, have not addressed the RAA as a whole and did not position intentions within a COR theory based framework.

The attitude and subjective norm components of the RAA could adequately address aspects of subjectivity within COR theory (Morelli & Cunningham, 2012). That is, attitudes touch on the overall intrinsic value that individuals ascribe to training participation (e.g., Fishbein & Ajzen, 2010). As such, attitudes may adequately capture the individual-level facet of the subjectivity surrounding resources (cf. Mitchell, Cropanzano, & Quisenberry, 2012). Similarly, subjective norms capture the perceived value training participation has within an individual's relevant social context (Rimal & Real, 2003). As such, subjective norms may address the contextual-level subjectivity of resources as they reflect the extent to which training participation is perceived to be valued within an individual's relevant social environment (e.g., peers, colleagues, and family members) (cf. ten Brummelhuis & Bakker, 2012; Winkel, Wyland, Shaffer, & Clason, 2011). Indirect evidence for the relevance of subjective norms can be found in previous studies identifying perceived attitudes of relevant others (Cully et al., 2000; Hidalgo et al., 2014) as predictor of training participation. As attitudes and subjective norms may determine the extent to which training participation is valued and, thus, whether training vouchers constitute resources, it is instrumental to include these RAA components.

The perceived behavioral control aspect of the RAA might capture the perceived ability to mobilize available resources into action. That is, availability of resources could be insufficient in actually facilitating goal attainment if an individual lacks the ability to use these resources (cf. Gallagher, 2012; Hochwarter, Perrewe, Meurs, & Kacmar, 2007). Perceived behavioral control addresses this notion by capturing the extent to which individuals believe to be capable of engaging in the goal-directed behavior concerned (e.g., Fishbein & Ajzen, 2010). As such, perceived behavioral control closely resembles self-efficacy in reference to a specific behavior, which has repeatedly been forwarded as particularly relevant to career development behavior (Abele & Spurk, 2009; Hackett, 1995; Hackett & Betz, 1981). For example, the social cognitive model of career self-management by Lent et al. (Lent et al., 1994; Lent, Ireland, Penn, Morris, & Sappington, 2017) prominently includes self-efficacy as an antecedent of career management behavior. Evidence for perceived behavioral control as relevant to training behavior has been found in studies identifying self-efficacy and self-image as predictors of training participation (Colquitt, LePine, & Noe, 2000; Gerards et al., 2014; Leuven, Oosterbeek, Sloof, & van Klaveren, 2005). Therefore, perceived behavioral control can be an important antecedent of training participation that may also moderate the effects of vouchers.

H5a. RAA components positively relate to training participation (direct covariate effects).

H5b. RAA components magnify training vouchers' effects on training participation, such that those scoring higher on RAA components are more likely to train when provided with vouchers (moderation effects).

2.5.2. Career and mobility ambitions

The extent to which individuals have training participation as goal can depend on career or mobility ambitions (Kuijpers, Schyns, & Scheerens, 2006). That is, individuals who want to leave their current position or organization or have high career ambitions can be expected to participate in training more. After all, such individuals have a direct interest to boost their attractiveness to employers, are more likely to have training participation as a goal, and likely perceive training vouchers as resources. Indeed, previous studies have documented job searching behavior (i.e. desires for mobility) and career ambitions as relevant predictors of training participation (Gerards et al., 2014; Mathieu, Tannenbaum, & Salas, 1992). In the context of training vouchers, these two personal characteristics could have effects similar the RAA components. As such, it is relevant to include career ambitions and mobility ambitions as covariates and potential moderators of the effects of training vouchers on training participation.

H6a. Career- and mobility ambitions positively relate to training participation (direct covariate effects).

H6b. Career- and mobility ambitions magnify training vouchers' effects on training participation, such that those scoring higher on these variables are more likely to train when provided with vouchers (moderation effects).

2.5.3. Additive effects of personal resources

A central notion within COR theory is that individuals who have many resources are more likely to accumulate additional resources (Hobfoll, 2001). This notion of resource gain spirals (Hakanen, Perhoniemi, & Toppinen-Tanner, 2008; Llorens, Schaufeli, Bakker, & Salanova, 2007; Mäkikangas, Bakker, Aunola, & Demerouti, 2010) likely applies to training participation as well. For training participation, people who have more resources could be more likely to participate in training through (at least) three possible mechanisms. First, those with context relevant resources such as employability could already be more employability seeking (cf. employability orientation (van Dam, 2004) and trainability (Heckman, 2000)). That is, employability seeking tendencies could have stimulated past employability development and may simultaneously underlie a current sensitivity towards further employability

development. Second, individuals with few resources could be in more draining employment situations with little room for training participation. For example, such individuals may be under high work pressure, be too tired, or be performing poorly so that the burden of additional training cannot be borne (cf. Whitman, Halbesleben, & Holmes, 2014). Third, relating to perceived behavioral control, individuals with more initial resources may have better starting positions to negotiate and actually participate in training. Considering these three mechanisms, training participation is expectedly higher among individuals with better abilities to function at work. A useful framework for capturing this ability is provided by Fleuren (2019), where indicators in the domains of health, competence, well-being, and employability are combined to capture sustainable employability (Fleuren et al., 2018).

H7a. Sustainable employability aspects positively relate to training participation (direct covariate effects).

H7b. Sustainable employability aspects magnify training vouchers' effects on training participation, such that those scoring higher on these variables are more likely to train when provided with vouchers (moderation effects).

2.6. Substitutive effects of personal resources

Arguably, some resources have such motivational potential that their effects are less contingent on the presence of other resources. Although the previous sections have argued that training vouchers should be particularly effective in facilitating training participation when people have high scores on the RAA components, resource substitutive effects may occur as well. Resource substitution refers to when one or several resources so effectively facilitate goal achievement that goal-oriented behavior becomes less contingent on other potential resources (Ross & Mirowsky, 1989, 2006). For example, specific vouchers could reduce the barriers to training participation to such an extent that less intrinsic motivation is required. In such situations, training participation would be less contingent on the presence of personal resources and characteristics (e.g., the RAA components). Particularly the flexible vouchers might have this effect given the broader set of means to reduce barriers they provide. Testing this hypothesis would contribute to the knowledge on possible interactions between resources (cf. Trougakos, Hideg, Cheng, & Beal, 2014; van Mierlo, Rutte, Vermunt, Kompier, & Doorewaard, 2006).

H8. The effects of flexible vouchers on training participation are less contingent on personal characteristics than those of other vouchers.

Fig. 1 provides an overview of the hypotheses and the expected direction of effects. The figure includes a path between demographic variables to be included as covariates and moderators.

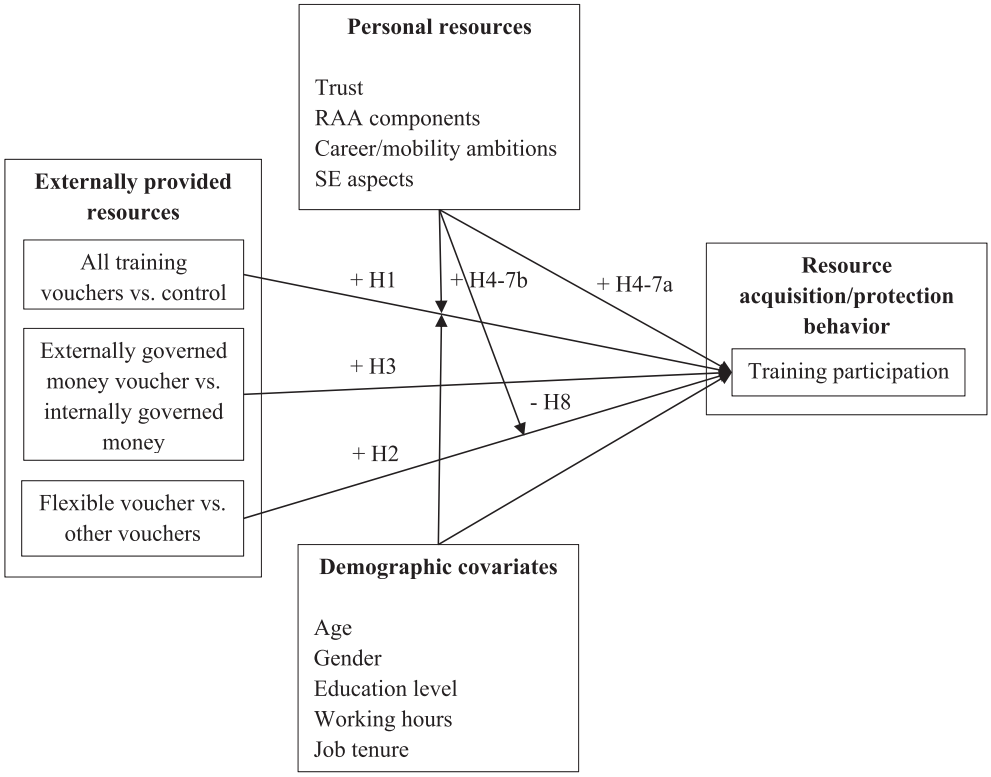

Fig. 1. Framework of hypotheses including vouchers as main predictors of training participation of interest with personal characteristics and demographic variables as covariates and moderators.

3. Methods

3.1. Participants

230 employees from twenty different departments of a large Dutch insurance company participated in the study. All participants were included because they were working in one of the participating departments. That is, department-managers decided whether their department participated in the study and, if so, all employees in their department were included in the study. Departments that were expected to undergo a major reorganization at some point during the study were not invited to participate in the study. Moreover, invitation of departments was ceased once a minimum of 200 participants (i.e. 40 per condition) was reached. This number of participants was based on power calculations in the G-power program (Faul, Erdfelder, Lang, & Buchner, 2007). In these calculations the power was fixed to 0.80, alpha to 0.05, the expected odds ratio to 2.50, and the assumed base probability under the null-hypothesis to 0.10. These inputs were based on the observed participation rate in the most similar study (Gerards et al., 2014) and the desire to achieve at least a medium effect size for it to be of practical relevance. Importantly, due to the novelty of our study no clear guidelines for the ideal inputs of the power analyses were available.

3.2. Design

Individual employees from participating departments were randomly assigned to one of five conditions in a five-arm parallel controlled trial. Each condition represented a different voucher type which all participants in that condition received or the control group, such that conditions were:

i) *Working time*: participants received 5 days' time paid by and allocated from within the organization to participate in a training of choice
ii) *Internally governed money*: participants received 750 euro's allocated from within the organization to spend on a training of choice
iii) *Externally governed money*: participants received 750 euro's allocated through an external training broker. This training broker provided a selection of training choices of established quality, did not communicate about training choices of employees with their line managers, and sent out three monthly reminders in the study's final stage
iv) *Internally governed flexible*: participants could choose varying amounts with a maximum of 750 euro's allocated from within the organization to spend on a training of choice or 5 days' time paid by the organization to participate in a training of choice. The conversion rate was 1 day = 150 euro's, such that participants could choose to use, for example, 2 days and 450 euro's together to spend on training. This conversion rate was based on the average wage costs of the core service employees involved.
v) *Nothing*: participants received no training budget through the voucher program

Randomization was performed by assigning each participant a random number (ranging from 1 to 5) using Microsoft Excel's random discrete value function. This resulted into approximately equal sized groups. To eliminate selection effects (e.g. relating to managers' decision to participate) the randomization was performed after the entire sample was complete. Table 1 provides an overview of demographic characteristics and size of each group. Note that although the sex ratios differed across conditions, this was purely due to chance and, thus, corresponding significance tests could only result in a negative finding or a type one error (Gruijters, 2016).

3.3. Procedure

The study started in May 2016 with participants receiving an e-mail providing general information about the study, including an invitation to participate in an online survey. Participants completed the online survey voluntarily without consequences and were only identifiable by a number uninterpretable to the researchers. Apart from two reminders participants did not receive any correspondence about the study, with the exception of participants in condition three. Participants could use their training voucher from the first e-mail in May 9th 2016 until April 1st 2017. To do so, participants needed to request the specific training and indicate voucher use with their manager. Only two specific training requests were not approved, because they were considered irrelevant to

Table 1
Demographic characteristics per condition at baseline.

Condition	Group size	Female:Male ratio	Mean age (SD)	Mean working hours per week (SD)	Mean job tenure in years (SD)	Number of participants dropped out[1]
i) Time	46	31:15	46.36 (8.44)	32.10 (7.24)	14.22 (11.66)	2
ii) Internal budget	44	25:19	47.00 (8.93)	32.47 (6.72)	13.18 (11.22)	3
iii) External budget	46	19:27	46.04 (10.08)	32.99 (7.44)	11.13 (8.05)	1
iv) Flexible	47	25:22	45.91 (7.80)	33.09 (6.13)	12.57 (8.80)	1
v) Nothing/control	47	31:16	48.23 (9.82)	33.42 (5.95)	12.32 (10.75)	1
Total	230	131:99	46.71 (9.02)	32.83 (6.66)	12.66 (10.11)	8

Note. [1] = Participants who dropped out during the pilot are not included in the reported group sizes.

Table 2
Overview of instruments used to measure potential covariates and moderators.

Construct	Number of items	Possible range	Source
Reasoned Action Approach components regarding professional development		1 (completely disagree) to 7 (completely agree)	Self-constructed following Ajzen (2006)
Attitude	3		
Perceived norm	3		
Perceived control	4		
Intention	1		
Perceived employability	3	1 (completely disagree) to 5 (completely agree)	(de Cuyper & de Witte, 2011)
Perceived health status	1	1 (excellent) to 5 (poor)	(Ware & Sherbourne, 1992)
Need for recovery	11	1 (no) to 2 (yes)	(van Veldhoven & Broersen, 2003)
Skill-gap	8	-9 (high surplus) to 9 (high gap)	(Humburg & van der Velden, 2016)
Job performance	4	1 (completely agree) to 5 (completely agree)	(Dyne & LePine, 1998)
Job satisfaction	3	1 (never) to 7 (on a daily basis)	(Schaufeli & Bakker, 2004)
Perceived ability and willingness to work until the retirement	3	1 (completely disagree) to 5 (completely agree)	(van Dam, van der Vorst, & van der Heijden, 2009)
Career ambitions	2	1 (completely agree) to 5 (completely agree)	(Gerards et al., 2014)
Trust	3	1 (completely agree) to 5 (completely agree)	(Goette, Huffman, Meier, & Stutter, 2012)
Mobility actions	4	0 (no) to 1 (yes)	Self-constructed
Work pressure	1	1 (no pressure) to 9 (extreme pressure)	Self-constructed

improving human capital or employability (i.e. one request in condition three, the other in condition four). Participants in all conditions could also participate in training by using regular budgets or private funds and could request funding to complement their training voucher (or lack thereof).

3.4. Ethical approval

This study was approved by the Ethical Committee of Maastricht University's Faculty of Psychology and Neuroscience, registered with reference number ECP-165-10_03_2013.

3.5. Instruments

The survey included several short questions measuring potential covariates and moderators of the vouchers' expected effects on training participation. Details about the constructs included in the questionnaires are in Table 2. Scaling of the variables is based on the default scaling of the original instruments. Most scales had adequate reliability with Cronbach's alphas ranging from 0.80 to 0.92. Two exceptions were the trust scale (alpha = 0.69) and the perceived ability and willingness to work until the age eligible for retirement scale (alpha = 0.72). The supplementary material provides details on the items and factor analyses where appropriate.

The dependent variable was training participation (either through the voucher or the standardly available training budget) and was registered by the organization as a dichotomous variable (i.e. training used during the period of the study: yes = 1 vs. no = 0). Notably, no participants in the first four conditions participated in training without also spending their voucher, resulting in no discrepancy between voucher use and training participation.

3.6. Analyses

The main analyses consisted of three binary logistic regressions. First, a binary logistic regression with condition as independent variable and training participation as dependent variable was estimated. Second, to account for the nested data structure (i.e., participants were nested in departments) a random intercept model with the same variable specifications was estimated to see whether training participation overall differed per department besides condition. Third, a random intercept random slope model was estimated to identify whether the effects of condition differed per department as well.

The second type of analyses consisted of separate multilevel binary logistic regressions including training participation as the dependent variable, voucher type (i.e. condition) as the main independent variable, and the variables listed in Table 2 as covariates. Additional covariates were based on previous research and included age (Colquitt et al., 2000), job tenure (Bassanini, Booth, Brunello, de Paola, & Leuven, 2007; Gerards et al., 2014), work pressure (cf. Tharenou, 2001), education level, gender, and working hours per week (Hidalgo et al., 2014). As the random intercept and random slope components were never significant, only the results of the models that included a random intercept were reported to still incorporate the nested data structure. Additionally, binary logistic regressions without multilevel components were performed for higher power in identifying covariates. Finally, a random intercept model and a non-multilevel binary logistic regression model that both included all significant covariates identified in the

Table 3
Overview of voucher condition effects on training participation in a fixed effects only model, a random intercept model, and a random intercept random slope model.

Condition	Control group as reference group		Internal flexible vouchers as reference group		Externally governed money as reference group	
	Odds ratio	*p*-Value	Odds ratio	p-Value	Odds-ratio	p-Value
Model type 1: binary logistic regressions including only fixed effects						
i) Time	1.026	.965	0.289*	.015	0.337*	.034
ii) Internal money	0.902	.864	0.254*	.010	0.296*	.024
iii) External money	3.048*	.030	0.859	.725	–	–
iv) Internal flexible	3.547*	.013	–	–	1.164	.725
v) Nothing/control	–	–	0.282*	.013	0.328*	.030
Model type 2: multilevel binary logistic regressions including a random intercept						
i) Time	0.988	.985	0.290*	.033	0.331	.059
ii) Internal money	1.073	.914	0.314	.051	0.360	.086
iii) External money	2.984	.059	0.874	.787	–	–
iv) Internal flexible	3.413*	.031	–	–	1.144	.787
v) Nothing/control	–	–	0.293*	.031	0.335	.059
Model type 3: multilevel binary logistic regressions including a random intercept and a random slope						
i) Time	1.054	.940	0.273*	.042	0.322	.076
ii) Internal budget	1.146	.845	0.297	.057	0.350	.101
iii) External budget	3.270	.060	0.849	.764	–	–
iv) Internal flexible	3.854*	.030	–	–	1.178	.764
v) Nothing/control	–	–	0.259*	.030	0.306	.060

Note. * = significant at $p < .05$; participants scored '1' on the dependent variable if they had participated in training and '0' if they had not.

previous separate models were estimated.

The third analyses consisted of separate multilevel binary logistic regressions with all the potential moderators of voucher type included. Specifically, each model included a random intercept, training participation as dependent variable, and voucher type, the specific covariate and an interaction between the standardized version of that covariate and voucher type as independent variables.

Finally, to rule out that any effects of condition were due to significant differences in means of the included variables, supplementary ANOVAs were performed. In each of these ANOVAs voucher type was the independent variable and the variable of interest was the dependent variable. These comparisons did not yield any significant results, means and standard deviations per condition as well as zero-order correlations between all study variables are in the supplementary materials (section C).

4. Results

4.1. Effects of vouchers

The different conditions were associated with different training participation rates. First, with 38.3% of individuals participating in training, the internally governed flexible vouchers achieved the highest participation rate, followed by the externally governed money (34.8%), working time (15.2%), control group (14.9%), and internally governed money (13.6%) conditions respectively. Second, as shown in Table 3, the flexible vouchers were associated with a significantly higher participation rate compared to the control group and the working time vouchers across all models. Training participation was also significantly higher in the externally governed money condition compared to all other conditions except the flexible vouchers, but these effects were no longer significant when the multilevel components were incorporated in the model. Importantly, the intercept (*highest* $var(u_{0j}) = 1.549$, *lowest* $p = .067$) and slope variance (*highest* $var(u_{1j}) = 0.248$, *lowest* $p = .556$) as included in the multilevel binary logistic regressions were never significantly different from zero. As such, later models (i.e., those testing effects of covariates and moderations) only included a random intercept so that the multilevel structure of the data would be accounted for.

Additional examinations of training participation revealed no clear patterns. First, the type of training participated in did not differ across conditions: Most participants chose career oriented training regardless of condition. Second, additional budget was provided to thirteen of the 47 voucher users complement their vouchers. Eleven of these additional budgets consisted of money and two of working time. Third, out of the eighteen flexible vouchers that were used, seven were used for working time, four for money, and seven for a combination of money and working time. Of the eleven participants who used their flexible voucher for either money or time, four complemented their choice for time with additional money and one complemented money with additional time. Finally, eight participants, evenly spread across conditions one, two, and three, requested to be moved to a different condition during the study (which was obviously not allowed).

4.2. Covariates

Besides the main effects of the conditions, several covariates were considered to rule out potential confounding effects. Table 4 shows the results from a series of binary logistic regressions, each including a single covariate and the conditions both with and

Table 4
Overview of hypothesized covariates' effects on training participation, tested in separate models.

	Binary logistic regressions without multilevel components		Multilevel binary logistic regressions with random intercept	
	Odds-ratio	p-Value	Odds-ratio	p-Value
Gender	1.082	.892	1.186	.656
Age	0.945*	.003	0.959	.057
Education level				
Low vs. middle	0.195*	.039	0.272	.124
Low vs. high	0.167*	.023	0.215	.068
Middle vs. high	0.853	.664	1.268	.571
Job tenure	0.971	.204	0.987	.618
Working hours per week	1.041	.132	1.011	.710
Mobility actions				
Currently actively looking for a new job	0.719	.538	1.006	.992
Have looked for a job in the past 6 months	0.958	.917	0.857	.746
Applied for a new job in current org.	0.615	.368	1.572	.474
Applied for a new job outside current org.	1.130	.836	0.702	.580
Career ambition				
Want a different job in current org. in 5 years	0.941	.690	1.179	.398
Want a different job in different org. in 5 years	1.470*	.027	0.821	.260
Perceived employability	1.167	.511	1.256	.400
Perceived ability and willingness to continue to work until retirement	1.195	.333	1.249	.292
Perceived health status	0.676	.075	0.671	.098
Need for recovery	1.030	.662	1.006	.934
Job performance	1.956*	.045	1.920	.097
Job satisfaction	1.216	.266	1.340	.150
Skill-gap	0.990	.539	1.002	.921
Perceived control over training behavior	1.168	.358	1.032	.866
Perceived norms regarding training	1.214	.238	1.099	.615
Attitude towards training	1.177	.282	1.036	.837
Intention to train	1.216	.094	1.090	.507
Trust	1.373	.302	1.397	.345
Work pressure	0.963	.691	0.956	.679

Note. * = significant at $p < .05$; participants scored '1' on the dependent variable if they had participated in training and '0' if they had not; condition v 'nothing' is the reference group.

without a random intercept addressing the nested data structure (i.e., participants were nested in departments). When the random intercept (which was insignificant across models) is included, no covariates had any significant effects on training participation besides the vouchers. In the simple binary logistic regression models, only age, education level (low vs. medium and low vs. high), the desire to work in a different organization in five years and job performance significantly affect training participation. In a full model including all of the covariates identified as having significant effects and the voucher conditions, only the effect of age remained significant. The covariates did not affect the significance levels of the effects of the different voucher types on training participation in any of the models.

4.3. Moderators

To estimate the extent to which the effects of vouchers depended on personal characteristics, several moderation analyses were conducted. Each of the aforementioned covariates was checked as a potential moderator of condition in a separate binary logistic regression model with a random intercept. This was done several times for each covariate, each time with a different condition as reference group. As shown in Table 5, when the control group was the reference group, the analyses revealed significant interaction effects between condition and perceived behavioral control, work pressure, trust, and the desire to work for a different employer in five years. Moreover, when the flexible voucher condition was the reference group, significant interaction effect between condition and attitudes, subjective norms, intentions, hours worked per week according to the contract, and perceived health status were found (Table 6). For brevity and clarity only the significant interactions are reported. Output of the other analyses can be requested from the corresponding author and simple slope plots for the significant moderation effects are in the supplementary material (section B).

5. Discussion

The present paper investigates the effectiveness of training vouchers on training participation by taking a Conservation of Resources (COR) theoretical perspective (Halbesleben et al., 2014; Hobfoll, 1989). Training vouchers are conceptualized as resources that can facilitate employees in attaining their potential goals of training participation, or more distally employability development/maintenance. As vouchers can offer different types of means, four types of vouchers are compared that either offered working time,

Table 5
Overview of significant moderation effects in separate multilevel binary logistic regressions with the control condition as reference group.

	Odds ratio	p-Value
Perceived behavioral control ∗ condition interactions		
Time voucher	1.409	.692
Internal money voucher	1.132	.891
External money voucher	4.732*	.036
Internal flexible voucher	6.178*	.016
Perceived behavioral control	0.281	.107
Time voucher ∗ ZPerceived behavioral control	9.492*	.039
Internal money voucher ∗ ZPerceived behavioral control	10.260*	.035
External money voucher ∗ ZPerceived behavioral control	4.228	.115
Internal flexible voucher ∗ ZPerceived behavioral control	2.642	.289
Mobility desires ∗ condition interactions		
Time voucher	1.815	.512
Internal money voucher	1.611	.597
External money voucher	5.038*	.045
Internal flexible voucher	7.601*	.014
Want to work at a different employer in 5 years	0.323	.083
Time voucher ∗ ZWant different employer	7.430*	.042
Internal money voucher ∗ ZWant different employer	5.339	.082
External money voucher ∗ ZWant different employer	1.995	.405
Internal flexible voucher ∗ ZWant different employer	2.467	.296
Work pressure		
Time voucher	2.208	.362
Internal money voucher	1.032	.975
External money voucher	5.593*	.033
Internal flexible voucher	7.542*	.015
Work pressure	1.758	.152
Time voucher ∗ ZWork pressure	0.405	.325
Internal money voucher ∗ ZWork pressure	0.112*	.022
External money voucher ∗ ZWork pressure	0.235	.095
Internal flexible voucher ∗ ZWork pressure	0.313	.209
Trust		
Time voucher	1.687	.508
Internal money voucher	1.311	.738
External money voucher	4.247*	.045
Internal flexible voucher	6.273*	.013
Trust	0.212	.126
Time voucher i ∗ ZTrust	2.175	.321
Internal money voucher ∗ ZTrust	5.848*	.048
External money voucher ∗ ZTrust	6.103*	.017
Internal flexible voucher ∗ ZTrust	3.016	.102

Note. * = significant at $p < .05$.

internally governed money, externally governed money, and internally governed money and working time combined. The results show that vouchers offering a choice of combinations of money and working time unambiguously result in the highest training participation. Additionally, personal characteristics show only a limited impact on training participation as covariates besides the conditions. Finally, several interactions between personal characteristics – particularly components from the Reasoned Action Approach (RAA) (Fishbein & Ajzen, 2010) – and voucher type are found that underline the subjective nature of training vouchers as resources. The remainder of this discussion section elaborates on these findings and their practical and theoretical implications. Additionally, strengths and limitations of the study are discussed.

5.1. Main effects of training vouchers on training participation

The effects of training vouchers on training participation provide clear insights into which vouchers are most effective. First, the comparisons reveal that *flexible vouchers* most effectively stimulate training participation. Regardless of whether the nested data structure (i.e. participants are nested in departments) and which covariates are included in the model, the flexible vouchers significantly improve training participation compared to the control group and the working time vouchers. Moreover, the flexible vouchers also differ significantly (nested structure not included) or marginally significantly (nested structure included) from internally governed money vouchers. Second, *externally governed money* vouchers offered through a training broker also outperform all conditions except the flexible vouchers, but this effect is only marginally significant when the nested data structure is included. Vouchers providing *internally governed money* or *working time* do not increase training participation significantly compared to any other condition. These findings suggest that flexible vouchers are unambiguously the most effective, but externally governed money

Table 6
Overview of significant moderation effects in separate multilevel binary logistic regression with the flexible voucher condition as reference group.

	Odds ratio	p-Value
Attitude * condition interactions		
Time voucher	0.195*	.029
Internal money voucher	0.152*	.014
External money voucher	0.537	.302
Control group	0.145*	.008
Attitude	0.341*	.012
Time voucher * ZAttitude	9.276*	.007
Internal money voucher * ZAttitude	13.096*	.003
External money voucher * ZAttitude	4.182*	.029
Control group * ZAttitude	2.511	.266
Subjective norms * condition interactions		
Time voucher	0.139*	.033
Internal money voucher	0.260*	.051
External money voucher	0.701	.533
Control group	0.209*	.022
Subjective norms	0.469*	.030
Time voucher * ZSubjective norms	14.531*	.008
Internal money voucher * ZSubjective norms	5.490*	.038
External money voucher * ZSubjective norms	3.839*	.035
Control group * ZSubjective norms	2.060	.321
Intentions * condition interactions		
Time voucher	0.063*	.029
Internal money voucher	0.158*	.014
External money voucher	0.585	.341
Control group	0.161*	.008
Intention to train	0.611	.082
Time voucher * ZIntention to train	36.933*	.022
Internal money voucher * ZIntention to train	5.577*	.041
External money voucher * ZIntention to train	2.394	.148
Control group * ZIntention to train	2.348	.234
Hours per week according to contract * condition interactions		
Time voucher	0.265*	.040
Internal money voucher	0.231*	.028
External money voucher	0.853	.759
Control group	0.293*	.034
Hours per week	0.889*	.043
Condition i * ZHours per week	5.475*	.027
Condition ii * ZHours per week	3.156	.129
Condition iii * ZHours per week	3.141	.053
Condition iv * ZHours per week	2.152	.251
Perceived health status * condition interactions		
Time voucher	0.292	.064
Internal money voucher	0.293	.056
External money voucher	0.861	.786
Control group	0.200*	.015
Perceived health status	0.762	.535
Time voucher * ZPerceived health status	1.538	.528
Internal money voucher * ZPerceived health status	1.662	.370
External money voucher * ZPerceived health status	3.380*	.034
Control group * ZPerceived health status	2.130	.260

Note. * = significant at $p < .05$.

vouchers seem promising as well. Therefore, Hypothesis 1 (i.e., vouchers are associated with higher training participation) is partially confirmed, as it depends on the type of voucher that is provided. For the training literature, these findings suggest that vouchers can be an effective way of promoting participation in training.

The finding that the *flexible vouchers* are most effective makes sense theoretically. Hypothesis 2 proposes that flexible vouchers facilitate goal attainment are more effective on training participation because the facilitate goal attainment more broadly. The confirmation of this hypothesis aligns with COR theory, as flexible vouchers provide more qualitatively distinct options that facilitate goal attainment. As multiple aspects of an individual's situation can hinder training participation, the broader palette of options for removing such barriers makes flexible vouchers more of a resource facilitating training participation (cf. Halbesleben et al., 2014). Arguably, flexible vouchers may also provide more autonomy in training participation. That is, flexible vouchers offer autonomy of choice between money and time and thereby may fulfill the basic need for autonomy that people have (Ryan & Deci, 2000). By

addressing this need, the vouchers could arguably achieve additional motivational potential beyond any of the other vouchers. These findings suggest that particularly flexible vouchers can be a useful tool to motivate training participation, and that autonomy is relevant as well. As flexible vouchers are promising, future research could disentangle whether their success is mainly due to the multiple options of addressing barriers or to the autonomy these vouchers provide.

The relatively modest effect of the *externally governed money vouchers* partially confirms Hypothesis 3. As argued, externally governed money vouchers could be more effective on training participation than internally governed money vouchers, because they incur less risk of signaling external mobility desires (cf. Connelly et al., 2011). Although significance levels depend on whether the nested data structure is (i.e., marginally significant at $p < .10$) or is not (i.e., significant at $p < .05$) accounted for, the results do suggest externally governed money vouchers have potential for stimulating training participation. Consequently, it seems that employees are less likely to train when their employer has information on their training participation and internal governance can be a barrier to training participation. However, as the data did not allow for any mediation analyses, the mechanisms should be studied more closely to rule out alternative explanations. For example, the findings may also be due to the clearer selection of training the external training broker offered. This could have reduced effort employees had to invest in selecting training courses and thereby facilitate training participation. Additionally, the finding that the nested data structure turns the significant effect to marginally significant might suggest that aspects of the department may account for variance in training participation. Moreover, given the effectiveness of externally governed money vouchers and flexible vouchers, it may be interesting to study combinations of these mechanisms. Although implementing such vouchers is complex (i.e., external governance of working time is difficult to organize), several avenues for research remain open with regard to externally governed vouchers.

5.2. Effects of covariates on training participation

Besides the voucher types only a few variables affect training participation as covariates. That is, separate binary logistic regressions show that age, education level, job performance, and the desire to work in a different organization in five years significantly affect training participation. Age has a small negative effect on training participation, indicating that older participants are slightly less likely to participate in training. Education level has a positive effect, as participants with a low education level are less likely to participate in training than those with medium and high education levels. Similarly, job performance and the desire to work in a different organization in five years have positive effects on training participation as well. When incorporated in a single binary logistic regression, only the small negative covariate effect of age remains significant. Moreover, when the nested data structure is accounted for, none of the hypothesized covariates significantly affect training participation. Additionally, including covariates do not affect the significance levels of the vouchers' effects on training participation. Therefore, training participation seems to be determined mainly by voucher type in this study. As such, it seems that training vouchers overrule the predictive potential of variables that are normally related to training. Importantly, these findings do not suggest that the covariates are irrelevant to training participation in absence of these voucher types.

5.3. Moderation effects of personal characteristics

Several personal characteristics are considered as potential moderators of the effects of the voucher type on training participation to address the subjective nature of vouchers as resources. Mainly, components of the *Reasoned Action Approach* (RAA) are considered to determine whether training vouchers or the specific means they offer are considered resources. That is, the RAA components of attitudes, subjective norms, perceived behavioral control, and intentions are hypothesized to reflect the extent to which training constitutes an individual's goal as well as an individual's baseline motivation to train (Hypothesis 5b). The analyses show these hypothesized moderation effects for most RAA components in specific voucher comparisons. Specifically, compared to the flexible vouchers, attitudes and subjective norms strengthen the effects of all other voucher types (but not the control group) on training participation. Similarly, intention strengthens the effects of the working time and internally governed money vouchers compared to the flexible vouchers. Interestingly, perceived behavioral control is not a moderator in these comparisons. However, perceived behavioral control did strengthen the relationship between voucher type and training participation for the working time and internally governed money vouchers compared to the control group. However, the other RAA components did not moderate the relationships between voucher types and training participation in these comparisons. In comparisons with the other voucher types as the reference group no additional significant moderation effects are found either.

The result pattern of the RAA components may have important theoretical implications. First, for flexible vouchers training participation does not depend on personal characteristics as much as for the other voucher types. Theoretically, this might suggest that flexible vouchers have such potential as resources that they may substitute personal characteristics that are typically necessary motivational resources (e.g., RAA components). As such, the result pattern could be evidence for the potential substitutive effects of resources (Ross & Mirowsky, 1989, 2006). Second, the finding that perceived behavioral control (of all RAA components) is not a moderator in the comparisons with the flexible vouchers might suggest that all vouchers offered similar levels of control over training participation. Arguably, this might eliminate the autonomy aspect as explanation for the effectiveness of flexible vouchers, as perceived behavioral control reflects beliefs that an individual can engage in the behavior in and of themselves (Fishbein & Ajzen, 2010). However, this should be tested in future experiments to draw a definite conclusion. Third, the sole moderating effect of perceived behavioral control in the comparisons to the control group could demonstrate additive effects of resources (Hobfoll, 2001). That is, as perceived behavioral control only moderates the effects of the working time and internally governed money vouchers, these vouchers should mainly be offered to people who already feel capable of training themselves. In line with COR theory, these two vouchers only

show effects when other resources (i.e. perceived behavioral control) are available. In sum, the moderation effects of the RAA components suggest substitutive effects of flexible vouchers as well as additive effects of the other vouchers in combination and RAA components. For the training literature, these findings suggest that the effects of approaches to elicit training participation can be contingent on personal characteristics of employees. Additionally, such contingencies on personal characteristics can be overcome by offering flexible arrangements for training.

In comparison to the flexible vouchers, two additional moderators of the effects of specific vouchers on training participation outside of the RAA are found. First, the number of hours participants work per week increases the likelihood of training participation among participations with working time vouchers. This might suggest that, although generally less effective, working time vouchers can be particularly effective among employees who work more hours per week. Theoretically, this effect might make sense as these employees have less free time to train. As such, working time vouchers are more helpful in achieving training participation and are thus more likely to constitute a resource (cf. Halbesleben et al., 2014). Second, perceived health status makes employees who receive the externally governed money vouchers more likely to train in comparison to those receiving flexible vouchers. This effect might be explained by the external nature of these vouchers. That is, employees with a lower health status might be more reluctant to participate in training, as they might expect that their employer would not respond positively to their participation given previous or more frequent sickness absence. As the employer could not monitor training participation on an individual level for the externally governed vouchers, employees with a lower health may show this reluctance to a lesser extent. Consequently, there is less of a barrier for employees with a lower health status to participate in training when the employer cannot monitor them.

External mobility ambitions, trust, and work pressure emerge as additional moderators in the comparisons with the control group. First, the ambition to work in a different organization in five years amplifies the effect of the working time vouchers. Arguably, employees who wish to leave the organization have employability development as a goal and are thus more sensitive to vouchers providing them with means of doing so. The moderation with time vouchers specifically could reflect that money is perceived less facilitative for those wanting to develop their employability. This might be explained by the fact that employees with external mobility ambitions could be in busier jobs and have less time to train. As such, time vouchers could be particularly helpful for this segment of employees. Second, trust amplified the likelihood of training participation for both the internally and externally governed money vouchers. For the externally governed money condition one might expect trust to be less important as employees have no reason to worry about communication to the employer. However, the salience of employer awareness might be higher in this condition simply because this condition exists. Consequently, whether employees trust the external training broker to not communicate training participation to the employer might be more relevant so that trait-trust becomes a more decisive factor for training participation. For the internally governed money vouchers the moderation might be due to employees not having trusting the employer's intentions behind implementing the voucher program. In that sense, employees who are more trusting might have been more likely to train. Third, the finding that work pressure weakens the effect of internally governed money vouchers compared to the control group could be that these vouchers require more of a time investment. That is, whereas other vouchers provide time or easily accessible training, the internally governed money vouchers require employees to select a training themselves while not having extra time for doing so available. Arguably, the moderations between trust and work pressure and internally governed money vouchers reflect the most baseline (i.e., of all conditions) type of voucher. That is, where other vouchers have voucher-specific moderators, the internally governed money vouchers' effects are moderated by aspects that are conceptually more distal to the voucher. In sum, these moderations provide insights into when non-flexible vouchers can be more or less effective as well.

5.4. Limitations and strengths

A first limitation of this paper is that the mechanisms through which the vouchers stimulate training participation could not be investigated. Although the study incorporated a three-wave survey, data from the second and third waves could not be used for analyses due to high panel attrition. This did not affect the main results, but data from these surveys could have provided additional insights into mediators of the effects of voucher type on training participation. A compensating strength of our study, however, is that the several moderators included at baseline can provide theoretical insights regarding these mechanisms as well (Vancouver & Carlson, 2014). Still, any future studies on this topic should invest in panel drop-out prevention or start off with a larger sample to maintain sufficient power for longitudinal analyses (while being aware of potential selection effects).

A second limitation of this study is that it includes data from only one organization. As organizational context may affect the readiness to participate in training (Colquitt et al., 2000; Mathieu et al., 1992), a large scale field experiment with participants from multiple organizations is desirable. However, such set-ups are difficult to realize in practice as multiple organizations with similar training needs at the same time that are also prepared to include a control group are not easy to come by. Despite not being ideal, the fact that our single organization study constitutes a *randomized field experiment* is undoubtedly a strength of the study. Randomized field experiments are still too rare, particularly in the field of training participation and studies on COR theory (Halbesleben et al., 2014). In that sense, the present paper provides important and unique insights into training participation and vouchers as resources that may stimulate it.

A third limitation of our study is its limited power. That is, the a priori power calculations focused on the main effects of the different voucher types on training participation. Here, the opportunity for including covariates and moderators should have been considered more broadly. Specifically, a broader potential for including three-way or several two-way interactions simultaneously would be informative theoretically. However, due to the limited sample size per condition our study cannot identify minor effects or include too many predictor variables in a single regression model. Importantly, the limited power of our study does not invalidate any of its conclusions. Instead, as power refers to the chance of wrongly accepting the null-hypothesis (i.e. not finding an effect that does

exist), the effects found in this study are conservatively estimated and typically larger in nature. It is possible that studies with larger samples would identify additional smaller effects. As such, readers are advised not to interpret the absence of specific effects as proof that the effect does not exist generally.

A fourth limitation of this study is that our study is not double blind. That is, all parties involved in the study should be considered as being aware of the purpose of the study and the existence of other conditions. As the experiment took place in an organization and people from the same department could be in different conditions, it would be naïve to assume that participants are uninformed. However, as it would nearly be impossible to create a setting in which the organization and all participants are blinded to condition and this would not constitute a realistic setting, it is unlikely that the lack of double blindness threatens the validity of this study. On a somewhat related note, it might be considered interesting to include a condition with externally governed working time or flexible vouchers. However, given that the organization typically has to allow for working time to be used for training, this would also be practically impossible.

A fifth consideration pertaining to this study relates to the effective features of the vouchers. One might argue that the flexible vouchers and the externally governed money vouchers each contain two manipulations. That is, the flexible vouchers provide more means of addressing barriers, but arguably more autonomy as well. As these aspects cannot be disentangled effectively (but see the interpretation of the perceived behavioral control moderations), it is unclear which of these two components are the main contributor. Similarly, the externally governed money voucher's effects could be explained by the absence of managerial monitoring. However, the external training broker also had a selection of trainings that employees could choose from (i.e., besides the free choice they had). This might have also made it easier for employees to select training.

Sixth, it should be noted that some of the measures of the covariates and moderators in our study are single-item measures. Although multi-item measures are generally preferred (e.g., Baumgartner & Homburg, 1996), the maximum length of the survey in the present survey did not allow for more extensive measures. Given the extensive validity evidence for most measures in our study, the use of such measures does not have to be problematic (e.g., the single perceived health status item). However, specifically the work pressure measure in our study may require more extensive validation. Nonetheless, given evidence of convergent validity (supplementary material, section A) and the unambiguous wording, there are no clear indications that the item does not constitute a valid (proxy) measure of work pressure.

Finally, it remains unclear to what extent the trainings employees participated in actually contribute to human capital development and (sustainable) employability. People are not perfectly rational or capable of predicting the long-term effects their choices and can make choices that have no or negative long-term effects (Hausman & McPherson, 2009; Sheshinski, 2003; Sunstein & Thaler, 2003). For example, regarding shift work, some employees prefer backwards rotating shifts because of the extra day off they provide (Knauth, 2001). However, on the long term such shifts have negative effects on their health (e.g. van Amelsvoort, Jansen, Swaen, van den Brandt, & Kant, 2004). As such, to incorporate the potentially complex effects of time, future studies should focus on long term effects of freely chosen training on the desired outcomes of the training (e.g. (sustainable) employability).

5.5. Practical implications and conclusion

The present paper features several main conclusions with practical implications. First, flexible vouchers are most effective in stimulating training participation. The flexible vouchers are associated with the highest training participation within this study, but also a higher participation rate compared to other studies on training vouchers that report participation rates of 18.4% (Messer & Wolter, 2009) and 19% (Gerards et al., 2014) respectively. Second, flexible vouchers make training participation less contingent on personal characteristics than all other voucher types. This finding expands the findings of Gerards et al. (2014) that suggest vouchers generally make training participation more contingent on personal characteristics. This paper shows that this contingency depends on the type of voucher provided. Third, the present paper shows that components of the RAA are particularly relevant to training participation, also in the context of a voucher program. Besides the theoretical insights that flow from these findings, this also underscores the relevance of various aspects of motivation in the context of different types of vouchers. Finally, externally governed monetary vouchers also show some potential to stimulate training participation. Although their effects are more contingent on personal characteristics and their effectiveness is less unambiguously demonstrated, externally governed money vouchers can be used to promote training participation. Arguably, combining external governance and flexibility could be even more fruitful, but for now practitioners seeking to promote training participation should focus on flexible vouchers.

Finally, the present paper has contributed to the COR theory literature and the literature on antecedents of training participation. Specifically, this paper shows that COR theory is a meaningful framework in the context of training and motivating employees to participate. Thereby, this study provides suggestions on how to handle motivation as one of the key steps for training implementation (Salas et al., 2012). Moreover, it empirically demonstrates key predictions flowing from COR theory regarding the motivational potential, subjectivity, additive effects, and substitutive effects of resources. In doing so, the present paper has answered calls from Halbesleben et al. (2014) for field experiments that consider COR theory's predictions and the subjectivity of resources.

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Author contributions statement

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First author: Conceptualization; Data curation; Formal analysis; Investigation; Methodology; Project administration; Validation; Visualization; Writing - original draft; Writing - review & editing.

Second author: Conceptualization; Methodology; Supervision; Investigation; Writing - review & editing.

Third author: Conceptualization; Supervision; Writing - review & editing.

Fourth author: Conceptualization; Supervision; Writing - review & editing.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jvb.2020.103403.

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